

From: Cindy Beeler **Ex. 6 Personal Privacy (PP)**
Sent: 12/30/2017 6:05:26 PM
To: Beeler, Cindy [Beeler.Cindy@epa.gov]
Subject: Support for LDAR
Attachments: NOBLE_-_APC_-_REB,_Rebuttal_Statement_of_Noble_.pdf; CMEScommentNSPSOOOOa.pdf; McVay_Hull_-_Assessment_of_State_Level_Fugitive_Emissions_Programs_in_Comparison_to_EPA_NSPS_(Dec_8,_2017).pdf

FROM: NSPS OOOOa Docket ... <https://www.regulations.gov/document?D=EPA-HQ-OAR-2010-0505-12433>

Rebellion is able to provide inspections at \$250 per site in Colorado, which is affordable and cost-effective even for the lowest producing well sites. With some customers, we can cover in upwards of 25 sites per day and have monitored over 1,100 pieces of overall equipment in one week. Our camera allows for speedy, efficient leak detection typically covering a site in less than 30 minutes. With the ability to quickly scan sites, it enables companies to perform inspections more often. It also supports our customers' ability to prioritize maintenance and repair of sites, reducing spent labor time and gas losses and allowing operators to bring down their leak rate by 90% over three months. All of these savings more than pay for the service operation of the camera.

FROM: NSPS OOOOa Docket ... <https://www.regulations.gov/document?D=EPA-HQ-OAR-2010-0505-12451> ... Attached please find the joint comments of Clean Air Council, Clean Air Task Force, Center for Biological Diversity, Earthjustice, Earthworks, Environmental Defense Fund, Environmental Integrity Project, Environmental Law and Policy Center, Natural Resources Defense Council, Sierra Club, and National Parks Conservation Association on the notice of data availability (NODA) for the proposed rule, Oil and Natural Gas Sector: Emission Standards for New, Reconstructed, and Modified Sources: Stay of Certain Requirements, 82 Fed. Reg. 51788 (November 8, 2017).

This comment submission includes four additional supplemental comments:

1. Renee McVay and Hillary Hull, Assessment of State-Level Fugitive Emissions Programs in Comparison to EPA NSPS (December 8, 2017)
2. William Allison, Colorado's Implementation of Requirements for Leak Detection and Repair and Closed Vent Systems (Dec. 8, 2017)
3. MJ Bradley - Memorandum, Estimate of Professional Engineers in O&G Industry (Dec. 6, 2017)
4. MJ Bradley - Memorandum, LDAR Workforce Analysis (Dec. 6, 2017)

Sources referenced in these comments are uploaded to this docket separately.

These comments are also submitted to the docket for the NODA for the proposed three month stay, Oil and Natural Gas Sector: Emission Standards for New, Reconstructed, and Modified Sources: Three Month Stay of Certain Requirements, 82 Fed. Reg. 51794 (November 8, 2017) (EPA-HQ-OAR-2017-0346).

- 1) Comment submitted by Clean Air Council et al. (part 1)
McVay_Hull_-_Assessment_of_State_Level_Fugitive_Emissions_Programs_in_Comparison_to_EPA_NSPS_(Dec_8,_2017).pdf

Assessment of State-Level Fugitive Emissions Programs in Comparison to EPA NSPS
December 8, 2017
Dr. Renee McVay, PhD
Research Analyst, Oil & Gas
Environmental Defense Fund
301 Congress Avenue, Suite 1300
Austin, TX 7870

In the following tables, we have compared the scope and requirements of each state program. The data clearly indicates that many of these programs do not achieve the emissions reductions that the NSPS does within each state, respectively. The existence of these state programs does not support a stay of the NSPS. Moreover, the assessment below is conservative, as it does not account for other major oil and gas producing states that EPA did not cite, such as New Mexico and Montana, which do not have fugitive emission programs.

FROM: NSPS 0000a Docket ... <https://www.regulations.gov/document?D=EPA-HQ-OAR-2010-0505-12452>

- 2) Comment submitted by Clean Air Council et al. (part 2)
NOBLE_-_APC_-_REB,_Rebuttal_Statement_of_Noble_.pdf

As part of CDPHE-APCD Reg.7 etc Rulemaking ...

BEFORE THE AIR QUALITY CONTROL COMMISSION, STATE OF COLORADO

IN THE MATTER OF PROPOSED REVISIONS TO REGULATION NUMBER 3,
PARTS A, B AND C, REGULATION NUMBER 6, PART A, AND REGULATION
NUMBER 7

REBUTTAL STATEMENT OF NOBLE ENERGY, INC. AND ANADARKO
PETROLEUM CORPORATION

Noble Energy, Inc. and Anadarko Petroleum Corporation ("Noble and Anadarko")
provide the following executive summary of their Rebuttal Statement.

V. The Proposed Rules Are Cost Effective (p.5)

The data provided in the Updated EIA and the EIA itself satisfy the statutory requirement that the Proposed Rules be cost effective. C.R.S. § 25-7-109(1)(b)(IV). Noble and Anadarko have undertaken analyses of their own estimated costs to comply with the Proposed Rules as offered herein. Those cost estimates are contained in Exhibits A and B, filed with this Rebuttal Statement. This cost data support the Division's position that the costs of the Proposed Rules are reasonable and cost effective on the basis of dollars per ton of VOC removed.

As evidenced herein and as will be further supported during the hearing, the proposed requirements to control both VOCs and hydrocarbons are readily available to operators, are technically feasible and show that the costs are reasonably related to the benefits. A number of measures illustrate the availability, feasibility, and cost effectiveness of the Proposed Rules. In many cases, the controls and other requirements set forth in the Proposed Rules are already being implemented by oil and natural gas operators. Thus, as an example, where flares or combustion devices are used to control VOC emissions, the Proposed Rules would not generally impose additional costs to control and reduce hydrocarbons. In addition, the Division estimates in the Updated EIA that the cost effectiveness of controlling methane and ethane at compressor stations and well production facilities would be \$321 per ton and \$516 per ton of reduced emissions, respectively. Accordingly, the economic costs of regulating hydrocarbon emissions are low and, indeed, cost effective. See C.R.S. § 25-7-109(1)(b)(VII).

A. The Division's Cost and Cost Effective Estimates Are Appropriate

The Division calculated the costs and cost effectiveness of instrument based monitoring for tanks, compressor stations and well production facilities. The Division's average cost and cost effectiveness estimates are summarized in the table below.

Division Cost and Cost Effectiveness Estimates

	Annualized Cost per Facility	\$/ton VOC Removed
Tanks	\$3,949	\$391
Compressor stations	\$3,720	\$667
Well production facilities	\$2,199	\$819

Source: APCD Updated EIA, Tables 16, 25 and 27.

The Division appropriately did not include repair and remonitoring costs in its Updated EIA. Noble and Anadarko projections based on the Proposed Rules with assumptions for minor technical clarifications indicate that remonitoring costs will not increase significantly from current levels. Cost effective measures such as the one found in Section XVII.F.8.b of the Proposed Rules that do not require the use of an IR camera for remonitoring keep the costs reasonable and within the required statutory bounds for costs. Method 21 could be used to satisfy the remonitoring requirement, which provides an alternative for the use of a screening procedure to determine whether a source has no detectable emissions. Method 21, "Determination of Volatile Organic Compound Leaks" § 8.3.3, available at <http://www.epa.gov/ttn/emc/promgate/m-21.pdf>.

Based on the information and analyses conducted to date by Noble and Anadarko, the Proposed Rules should not significantly affect the cost of repairs to operators. The companies anticipate that many leaks will likely be discovered and corrected on the spot at minimal cost by the workers performing instrument based monitoring. Also, the repair costs currently incurred under existing monitoring programs could legitimately be excluded from any estimate of the costs of the Proposed Rules.

B. Noble's and Anadarko's Cost and Cost Effectiveness Estimates Support the Division's Estimates

Based on a review of the Proposed Rules with an understanding that minor technical clarifications may be warranted, Noble's estimates of cost and cost effectiveness support the Division's Updated EIA. Based on company-specific historic data and certain estimated values, Noble anticipates that LDAR monitoring at well production facilities would cost between approximately \$260 and \$430 per inspection, with cost effectiveness between approximately \$50/ton and \$380/ton VOC removed, depending on the facility size, emission estimates, and other factors.

Similarly, assuming only minor technical clarifications are made to the Proposed Rules, Anadarko's cost estimates also support the Division's Updated EIA. Based on company-specific historic data and certain estimated values, Anadarko anticipates that LDAR monitoring would cost approximately \$450 per inspection at well production facilities, and approximately \$1,260 per inspection at compressor stations, depending on the facility size, estimated values, and other factors. Anadarko also estimated the cost of the additional AVO inspections that would be required under the Proposed Rules to be approximately \$135 per inspection. The per inspection cost is lower than LDAR inspections, but due to the high number of AVO inspections, this requirement would increase Anadarko's annual well production facility monitoring costs by more than approximately \$3.5 million from current levels overall.

The estimates of cost and cost effectiveness submitted by Noble and Anadarko are preliminary and are subject to change as they continue to evaluate the requirements in the Proposed Rules, and any subsequent revisions thereto.

C. Factors Affecting Estimates of Costs and Cost Effectiveness

In reviewing the various prehearing statements of parties as well as that of the proponent of the Proposed Rules, cost and cost effectiveness is the subject of much scrutiny and disagreement. Noble and Anadarko believe that the Division has taken a reasonable position with respect to costs and cost effectiveness of the current Proposed Rules and have data that support the Division's position. Adoption of other positions could have a significant impact on the figures

reported in the Updated EIA. The list below identifies some examples for the Commission's consideration that could have a significant impact on the Cost and Cost Effectiveness estimates.

1. Time Required to Perform Inspections

The Division assumed IR inspections would be 50% faster than Method 21 inspections for compressor stations and well production facilities, and solicited data on this issue to further inform its analysis. APCD Updated EIA at 16. Noble and Anadarko's experience indicates that travel time has as much or more impact on the time needed for LDAR inspections than the number of components, especially for smaller facilities. Nonetheless Noble and Anadarko find the Division's overall time estimates to be reasonable.

The Division estimates that **well production facilities would require an average of 4.75 hours to inspect**. Based on company-specific historic data, Noble estimates that **one inspector can inspect two to three well production facilities per day and Anadarko estimates that one inspector can inspect up to three well production facilities per day**. These estimates are in line with the Division's projections.

2. Emission Reductions From LDAR and STEM Requirements

While Noble and Anadarko do not have complete data on the reductions in VOC and hydrocarbon emissions that will result from the LDAR and STEM programs in the Proposed Rules, they believe these are reasonable, cost effective approaches to reduce VOC and hydrocarbon emissions from oil and natural gas operations. As such, they support these requirements in the Proposed Rules. While some parties contend that the Division's estimate of emission reductions that would be achieved by the Proposed Rules is too high, other parties assert that the Division's estimates are too low. In the absence of a widely accepted protocol for estimating the emission reductions achievable through instrument based monitoring, Noble and Anadarko submit that it is reasonable for the Commission to rely on the Division's emission reduction estimates.

3. Ongoing Benefit of Leak Inspections

The Division assumed that the emissions reduction achieved by the STEM and LDAR programs would remain constant every year. Some parties have asserted that there is a declining benefit from STEM and LDAR inspections, thereby significantly increasing the cost per ton of VOC removed in subsequent years, while other parties have asserted that emission reductions rise as inspections become more frequent.

Based on data collected from its own LDAR monitoring experience, Trihydro estimates the initial component leak rate frequency (before the first LDAR inspection) at new and modified gas processing plants to be 1.7%. WPX – PHS Ex. A. The leak rate frequency falls to 0.4% after the first monitoring period and averages 0.3% over 12 consecutive calendar quarters. Id. The Trihydro report appears to be reliable because it is based on actual measured data. While it does support a decline after the first monitoring period, the Trihydro report then evidences a steady state of leak detection after that.

Given the limited data available, and that the only available data supports a limited onetime reduction in leak rate frequency, it is reasonable for the Commission to rely on the Division's assumption that LDAR emission reductions remain constant each year, until further data is developed.

... As discussed above, some parties contended that instrument based inspection costs are significantly higher than the Division's estimates. Other parties asserted that instrument based inspections are profitable. The fact that other parties are arguing for both higher and lower costs and higher and lower emission reductions than the Division relied on in its analysis of the Proposed Rules provides further evidence that the Division's Proposed Rules are balanced. As also discussed above, the Noble and Anadarko data supports the Division's cost estimates, and its finding that the Proposed Rules are cost effective.

... B. Frequency of LDAR Inspections

The proposed monitoring schedule varies from one-time monitoring at the smallest facilities to monthly monitoring at the largest. The proposed schedule appropriately places greater compliance burdens on facilities that have higher levels of air emissions.

... Some parties seek to increase or decrease the frequency of inspections ... Thus, again, these divergent views on more frequent and less frequent inspections suggest that the inspection frequency in the Proposed Rule is a balanced approach that accommodates the competing interests of the parties.

... Additional bases of disagreement among the parties, with some wanting a more stringent rule, and others wanting a less stringent rule, are summarized and set forth in a table, attached to this Rebuttal Statement and incorporated herein as if fully set forth herein. Attachment A.

I COULD NOT FIND THIS NOBLE/ANDARKO REBUTTAL ON THE AQCC FTP DOCKET SITE ... so I cannot find the Attachment A they refer to

FROM: NSPS OOOOa Docket ... <https://www.regulations.gov/document?D=EPA-HQ-OAR-2010-0505-12435>

3) DOCUMENT ID: EPA-HQ-OAR-2010-0505-12435 (<https://www.regulations.gov/document?D=EPA-HQ-OAR-2010-0505-12435>)

DOCUMENT TYPE: PUBLIC SUBMISSIONS

POSTED DATE: 12/18/2017

DOCUMENT TITLE: Comment submitted by Patrick Von Bargen, Executive Director, The Center for Methane Emissions Solutions (CMES) ... attached

From CDPHE-APCD's Oct/Nov Reg. 7 Rulemaking ...

<ftp://ft.dphe.state.co.us/apc/aqcc>

11/10/2017 08:10AM
20, 2017

Directory Regulation Number 7 Rulemaking Hearing - October 19 &

<ftp://ft.dphe.state.co.us/apc/aqcc/Regulation%20Number%207%20Rulemaking%20Hearing%20-%20October%2019%20%26%2020,%202017/100417-Rebuttal%20Statements/Environmental%20Defense%20Fund/EDF%20-%20REB.pdf>

EDF opposes limiting inspections to only controlled storage tanks, as proposed by the IIWG. Inspecting access points, even at uncontrolled tanks, can help operators to identify improperly operating storage tank systems that can lead to excess emissions. For example, if a separator dump valve is malfunctioning, an operator would see excess emissions emitted from a tank access point. Excess emissions from an uncontrolled tank can indicate problems in the design or operation of the storage tank and separator system. Addressing these malfunctioning uncontrolled tank systems can reduce emissions and enhance the safety and efficiency of the facility.

<ftp://ft.dphe.state.co.us/APC/AQCC/Regulation%20Number%207%20Rulemaking%20Hearing%20-%20October%2019%20%26%2020,%202017/091417-Prehearing%20Statements,%20Alternate%20Proposals%20%26%20Exhibits/Air%20Pollution%20Control%20Division/APCD%20-%20PHS%20EX-G.pdf>

Presented in CDPHE-APCD, EX.G
(but footer says "DGS - PHS EX. AA")
"August 15, 2013 - Update of Fugitive Equipment Emission Factors"
Clearstone Engineering – Draft Report for CAPP

<ftp://ft.dphe.state.co.us/APC/AQCC/Regulation%20Number%207%20Rulemaking%20Hearing%20-%20October%2019%20%26%2020,%202017/091417-Prehearing%20Statements,%20Alternate%20Proposals%20%26%20Exhibits/Air%20Pollution%20Control%20Division/APCD%20-%20PHS%20EX-H.pdf>

Presented in CDPHE-APCD, EX.H
CAPP REPORT (by Clearstone Engineering)
Update of Fugitive Equipment Leak Emission Factors
February, 2014

This report presents updated average emission factors for estimating emissions from fugitive equipment leaks at upstream oil and natural gas (UOG) facilities.

Through industry participation, leak survey results for 120 facilities in Alberta and British Columbia, comprising an estimated 276,947 equipment components, were compiled and assessed. In comparison, the CAPP (2005) factors are based on leak survey results for 251,431 equipment components. A comparison of the two data sets indicates that, overall, the emissions due to fugitive equipment leaks have decreased by 75 percent since the implementation of DI&M programs. Only emission factors for connectors in gas/vapour service at natural gas facilities were unchanged. Emission factors for all other categories with more than 50 leakers showed substantial reductions compared the CAPP (2005) values. These results are a strong indication that DI&M programs and CAPP's best management practice for Management of Fugitive Emissions at Upstream Oil and Gas Facilities are effective in controlling fugitive equipment leaks.